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Newsletter from the Office of the Chief Electrical Inspector

Stephen Thornton, Chief Electrical Inspector **Vol. 20 No. 6 SE** **June 2017**

SPECIAL EDITION

Significant 2017 NEC® & WAC 296-46B Changes

This issue is dedicated to a review of some of the significant changes in the 2017 National Electrical Code (NEC®) and WAC 296-46B Electrical Safety Standards, Administration and Installation electrical rules. The department adopted revisions to WAC 296-46B, including adoption of the 2017 NEC® with an effective date of July 1, 2017. Installations made under any electrical permit purchased on or after July 1, 2017 are subject to the requirements of the 2017 WAC 296-46B and the 2017 NEC®.

The recent rulemaking process was necessary to align the previous July 2014 WAC 296-46B (based on the 2014 NEC®) with the 2017 NEC®. The department adopted very few amendments to the NEC®.

This document does not cover all changes. It is meant to assist you in becoming aware of some of the significant changes in the 2017 NEC® and changes to WAC 296-46B. The explanations vary from the actual code language; for clarification, refer to the 2017 NEC® and/or WAC 296-46B. A complete version of the 2017 ***WAC 296-46B*** will soon be available at: ***http://www.lni.wa.gov/TradesLicensing/Electrical/LawRulePol/LawsRules/default.asp***.

- **WAC 296-46B-010(6)(a) – Exterior Wall Cover Inspections.**

  Prior to completion of an exterior wall cover inspection, the exterior shear panel/sheathing nail inspection must be completed by the building code inspector and, where siding nails or fasteners which penetrate into the wall cavity are to be used, all siding must be installed; or all wiring or device boxes must be a minimum of 2 ½ inches from the exterior surface of the framing member; or all wiring and device boxes must be protected by a steel plate at least 1/16 inch thick and of appropriate height and width to cover the area of the wiring or box.

- **NEC® 110.14(D) – Electrical Connections – Installation.**

  Where a tightening torque is indicated as a numeric value on equipment or in installation instructions, a calibrated torque tool must be used to achieve the indicated torque value, unless the equipment manufacturer has provided installation instructions for an alternative method of achieving the required torque.

- **NEC® 110.16(B) – Arc-Flash Hazard Warning – Service Equipment.**

  In other than dwelling units, a permanent label must be applied to service equipment rated 1200 amps or more, which states nominal system voltage, available fault current, clearing time of service overcurrent protective devices, and date the label was applied.

- **NEC® 210.8(B) and (E) – Ground-Fault Circuit-Interrupter Protection for Personnel – Other Than Dwelling Units.**

  GFCI protection for other than dwelling units has been expanded to include:
  - All single-phase receptacles rated 150 volts to ground or less (i.e., 120V, 208V and 240V), 50 amperes or less in the specified locations. Washington did not adopt an additional requirement for GFCI protection for three-phase receptacles rated up to 100 amperes.
  - Crawl space receptacles – at or below grade level.
  - Receptacles in unfinished portions or areas of the basement not intended as habitable rooms.
  - Crawl space lighting outlets not exceeding 120 volts.

- **NEC® 210.11(C)(4) – Branch Circuits Required – Dwelling Unit Garages.**

  At least one 120-volt, 20 ampere branch circuit must be installed to supply receptacle outlets in attached garages and in detached garages with electric power. The circuit shall have no other outlets.

- **NEC® 210.12(C) – Arc-Fault Circuit-Interrupter Protection – Guest Rooms and Guest Suites.**

  All 120-volt, single-phase, 15- and 20-ampere branch circuits supplying outlets and devices installed in guest rooms and guest suites of hotels and motels must have AFCI protection.

- **NEC® 210.52(C)(3) and WAC 296-46B-210(8) – Dwelling Unit Receptacle Outlets – Peninsular Countertop Spaces.**

  The 2017 NEC® changed how peninsular countertop spaces are measured. Revised language states the peninsula is measured from the connected perpendicular wall. This change allows a receptacle installed in the wall at that space to count as the required receptacle serving the peninsula. WAC 296-46B-210(8) amends this to allow the wall receptacle to serve the peninsula only where the receptacle is located within 8 feet of the outside edge of the peninsular countertop.

- **NEC® 210.71 – Meeting Room Receptacles.**

  Meeting rooms of not more than 1000 square feet in other than dwelling units must have 120-volt 15- or 20-ampere receptacles installed in the specified locations.

- **WAC 296-46B-240(1) – Overcurrent Protection – Not Exposed to Physical Damage.**

  A new rule establishes minimum mounting height requirements for enclosures installed outdoors containing overcurrent devices. Generally, the minimum mounting height of the enclosure is 24 inches above finished grade unless the enclosure meets the specified conditions.

- **WAC 296-46B-250(5) – Grounding Electrode Conductor Installation – Physical Protection.**

  A new rule reflecting existing policy specifies when a grounding electrode conductor will be considered to be not exposed to physical damage. This rule was placed in WAC 296-46B to align with current department policy established in the ***November 2011*** Electrical Currents newsletter.

- **NEC® 250.94 – Intersystem Bonding Termination Device.**

  WAC 296-46B-250 was revised to eliminate a rule that exempted installations from the requirements of NEC® 250.94. This means that an intersystem bonding termination device meeting the requirements of NEC® 250.94 must be provided external to enclosures at the service or metering equipment, or at the disconnecting means for separate buildings to provide a grounding means for communications systems.

- **NEC® 310.15(B)(3)(c) – Raceways and Cables Exposed to Sunlight on Rooftops.**

  Table 310.15(B)(3)(c) was deleted and replaced with text requiring an ambient temperature adder of 33°C only when a raceway or cable is installed less than 7/8 inch above a rooftop in direct sunlight. This would be a violation however, because the general rule states that raceways or cables shall be installed a minimum of 7/8 inch above the roof to the bottom of the raceway or cable. Anyone up for a 2020 NEC® public input on this one?

- **NEC® 310.15(B)(7) – Single-Phase Dwelling Services and Feeders.**

  The allowance to reduce the feeder size for residential feeders that supply the entire load of a dwelling unit was expanded to include single-phase feeder conductors consisting of 2 ungrounded conductors and the grounded conductor of a 208Y/120V system.

- **NEC® 338.10(B)(4) – Ampacity of Type SE Cable Installed in Thermal Insulation.**

  Where Type SE cable is used as interior branch circuits and feeders and where installed in thermal insulation, the ampacity shall be in accordance with the 60°C conductor temperature rating only for cables with ungrounded conductor size 10 AWG or smaller. For cables larger than 10 AWG, the ampacity shall be based on the rated

operating temperature of the specific cable after applicable correction and adjustment factors are applied (See NEC® 310.15(A)(3) for temperature limitation of conductors).

- **NEC® 406.12 – Tamper-Resistant Receptacles.**

  Requirements for tamper-resistant receptacles has expanded to pre- and elementary schools, certain areas of medical and dental offices, gymnasiums, skating rinks, auditoriums, and dormitories.

- **NEC® 430.99 – Motor Control Centers – Marking Available Fault Current.**

  The available short circuit current at the motor control center and the date the short circuit current calculation was performed shall be documented and made available to those authorized to inspect the installation.

- **WAC 296-46B-440 – Split System HVAC/R Disconnecting Means.**

  This requirement did not change, but was relocated from WAC 296-46B-424. In one- and two-family dwelling units, a disconnecting means is required for the indoor unit(s) of a split system HVAC/R system, unless the outside unit's disconnecting means is lockable, disconnects the indoor unit and an indoor disconnecting means is not required by the manufacturer.

- **WAC 296-46B-553 – Floating Buildings – Ground-Fault Protection.**

  The ground-fault protection specified in NEC® 553.4 is amended to require all overcurrent protective devices that supply the floating building to have ground-fault protection not exceeding 30 mA. Until July 1, 2018, the ground-fault protection level is amended to allow a maximum of: 100 mA for overcurrent devices supplying feeder conductors; and 30 mA for overcurrent devices supplying branch circuit conductors and outlets. This one-year period will allow further consideration of the concern that 30 mA protection of feeders may cause unwanted tripping due to cumulative leakage currents from multiple circuits.

- **NEC® 555.3 and WAC 296-46B-555(1) – Marinas, boatyards, and commercial and noncommercial docking facilities.**

  All overcurrent protective supplying marinas, boatyards, and commercial and noncommercial docking facilities must have ground-fault protection not exceeding 30 mA. Until July 1, 2018, the ground-fault protection level is amended to allow a maximum of: 100 mA for overcurrent devices supplying feeder conductors; and 30 mA for overcurrent devices supplying branch circuit conductors and outlets. This one-year period will allow further consideration of the concern that 30 mA protection of feeders may cause unwanted tripping due to cumulative leakage currents from multiple circuits.

- **NEC® 555.24 – Signage – Marinas, boatyards, and commercial and noncommercial docking facilities.**

  Permanent safety signs must be installed to give notice of electrical shock hazard risks to persons using or swimming near a boat dock or marina stating – "WARNING – POTENTIAL SHOCK HAZARD – ELECTRICAL CURRENTS MAY BE PRESENT IN THE WATER."

- **NEC® 700.3(F) – Emergency Systems – Temporary Source of Power for Maintenance or Repair of the Alternate Source of Power.**

  New provisions for providing permanent switching means to connect a portable or temporary alternate source of power when an emergency system relying on a single alternate power source will be disabled for maintenance or repair.

- **NEC® 700.10(D) – Emergency Systems – Fire Protection of Wiring.**

  Additional fire protection requirements were added for emergency system feeders in health care facilities where persons are not capable of self-preservation, and educational facilities with more than 300 occupants. These requirements currently apply to high-rises and assembly occupancies of greater than 1,000 persons.

- **WAC 296-46B-705 – Interconnected Electric Power Production Sources – Wiring Methods for Supply Side Interconnections.**

  In addition to the requirements of NEC® 705.31, electric power production source conductors connected to the supply side of the service disconnecting means must be installed using wiring methods specified for service conductors in WAC 296-46B-230(7).

- **WAC 296-46B-900 – Electrical Plan Review – Electric Power Production Sources.**

  Plan review will be required for electric power production sources such as solar photovoltaic, fuel cell, and wind electric systems with a total rating of 9600 watts or more, when installed at educational, institutional, or health care facilities.

- **WAC 296-46B-901(9) – Requests for Inspections – Temporary Installations.**

  Where temporary installations will be energized for less than 48 hours (e.g., load banks, generators, etc.) a request for inspection must be made by contacting the local electrical inspection supervisor at least three working days prior to the requested date of inspection.

- **WAC 296-46B-908(10) – Class B Random Inspection – Scope of Work.**

  The scope of work for Class B random inspection labels was expanded to include:
  - A single, line-voltage flexible supply whip associated with like-in-kind replacement of HVAC equipment. This may be done on the same Class B label with the replacement unit if done at the same time.
  - Replacement of not more than ten standard receptacles with AFCI receptacles.
  - The installation or replacement of a single electric sign on an existing 120-olt, 20-amp maximum branch circuit.

- **WAC 296-46B-915 – Civil Penalty Schedule.**

  The penalty schedule was revised as follows:
  - A lower penalty amount was specified for failing to display a certificate of competency while working in the trade provided the person possesses a valid, active certificate. Penalty amounts are $50 for the first offense and $100 for each offense thereafter.
  - A new penalty amount was specified for causing or failing to correct a serious violation. A serious violation is a violation of chapter 19.28 RCW or 296-46B WAC that creates a hazard of fire or a danger to life safety. Penalty amounts are $1,000 for the first offense, $3,000 for the second offense, and $5,000 for each offense thereafter. Depending on the violation, a first offense could result in suspension of the person's certificate of competency.

- **WAC 296-46B-925(22) – Licensing Exemptions – Manufacturers of Electrical/Telecommunications products.**

  The allowance for manufacturer's authorized factory-trained technicians to perform replacement of electrical components within the confines of a product without licensing during the manufacturer's written warranty period was limited to a period not to exceed one year from the date of original installation of the new product.

- **WAC 296-46B-935(12) and 940(12) – Activating a Suspended Administrator's or Electrician's Certificate.**

  Clarification was made that before a suspended administrator's or electrician's certificate can be activated, the holder must pass the appropriate administrator or electrician examination in accordance with RCW 19.28.211(2).

- **WAC 296-46B-970(5)(vi) – Instructor Approval Minimum Requirements.**

  An addition was made to the list of qualifications for continuing education and classroom education instructors to allow subject matter experts approved by the chief electrical inspector who can demonstrate appropriate knowledge of, and experience in the electrical construction trade and working as an electrical/electronic trainer.